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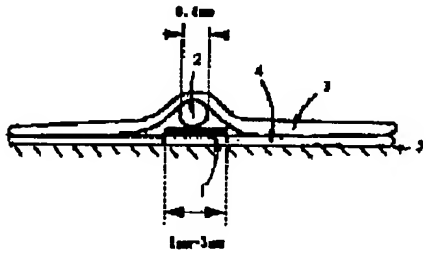
(54) DIAGNOSTIC OR THERAPEUTIC MARKER FOR MAGNETIC RESONANCE IMAGE DIAGNOSTIC DEVICE OR CT DEVICE

(57) Abstract:

PROBLEM TO BE SOLVED: To miniaturize a marker so as to be safely usable by laminating a plastic sheet and a double-surfaced adhesive plastic sheet, laminating and nipping a nonmagnetic metal wire and a magnetic tape between the two layers.

SOLUTION: A plastic sheet 4 constituting a sheet type marker has a magnetic tape 1 and a nonmagnetic metal wire 2 nipped between it and a plastic sheet 3, and is formed of a double-surfaced adhesive tape so as to be adhesive to the skin 5 of a subject. The nonmagnetic metal wire 2 is nipped in the state layered on the magnetic tape 1 between the plastic sheet 3 and the plastic sheet 4 formed of the double-surfaced adhesive tape. When this is adhered to the skin 5 of the subject in the brain surface or other interesting area to photograph it by a magnetic resonance image diagnostic device, the diagnostic or therapeutic position of the subject can be precisely positioned.



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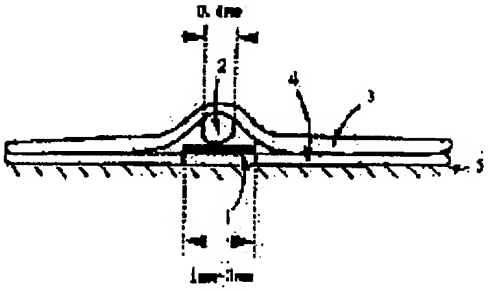

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the marker for a diagnosis / therapy for a magnetic resonance imaging system or CT scanners who can use for positioning and a diagnosis of the area of interest of the analyte photoed with the magnetic resonance imaging system or the CT scanner.

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PRIOR ART

[Description of the Prior Art] As a conventional technique, they are a magnetic resonance imaging system or a CT scanner. In order to photo the brain front face of analyte, and other important point diagnostic parts, to obtain the medical image which detects the internal structure and lesion section correctly, and can diagnose them exactly and to position the therapy part of analyte to a precision Form the cavernous section between the plastics made into the laminating, make the cavernous section filled with liquids, such as water, as easiest ingredient, and a magnetic resonance signal is detected. Or it is the marker who does the operation which pours in the gel of the fat-like quality of the material, and controls a magnetic resonance signal, and the thing of the non-inserting type into analyte or an inserting type has been offered. For example, the marker of the inserting type cross-joint form into the analyte indicated by JP,5-293094,A builds in the small coil in coil hippo -, makes a magnesium chloride water solution full, and is formed. Moreover, the **** inserting type marker (U.S. Pat. No. 1994 year 5368030 reference) who enclosed and formed the liquid in the cavernous section prepared in the cylindrical shape marker center section made from gel which carried out the laminating, and the marker (U.S. Pat. No. 1995 year 5427099 reference) who enclosed and formed lipid gel between two-layer plastics are offered as therapy part positioning by the magnetic resonance imaging system or the CT scanner, or a marker for medical diagnostic imaging. Like the marker who constitutes a therapy part positioning device for magnetic resonance imaging systems which was furthermore indicated by JP,2-98335,A, there are some which are formed by carrying out the laminating of the contrast-medium layer to a plastic plate.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The front view of one example of the sheet type marker who indicated to claim 1 of this invention.
[Drawing 2] The sectional view of drawing 1 .
[Drawing 3] The sectional view of other examples.
[Drawing 4] The perspective view of the 3rd example.
[Drawing 5] The 1 arrangement block diagram of the ruler for positioning of a sheet type marker.
[Drawing 6] Other arrangement block diagrams of the ruler for positioning of a sheet TAIPUMA-mosquito.
[Drawing 7] The 3rd arrangement block diagram of the ruler for positioning of a sheet TAIPUMA-mosquito.
[Drawing 8] One example of a flexible TAIPUMA-mosquito.
[Drawing 9] The application Fig. to the analyte of a flexible TAIPUMA-mosquito.
[Drawing 10] The application Fig. of the typeface of 8 of a flexible TAIPUMA-mosquito.
[Drawing 11] The application Fig. of Z form of a flexible TAIPUMA-mosquito.
[Description of Notations]
When laid underground in the edge of 1 magnetic tape, 2 non-magnetic metal lines, three sheets plastic, the sheet plastic of 4 double-sided adhesiveness, the skin of 5 analyte, 6 spiral non-magnetic metal line, the magnetic tape that carried out 7 laminatings, gel or a liquid, 8 plus theque tube, and 9 plus theque tube, the tube made from 10 latexes, and 11 plus theque tube 8, they are the opening side edge section of the plug-like non-magnetic metal line 6, and the opening side edge section of the tube made from 12 latexes.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the marker for a diagnosis / therapy for a magnetic resonance imaging system or CT scanners who can use for positioning and a diagnosis of the area of interest of the analyte photoed with the magnetic resonance imaging system or the CT scanner.
[0002]
[Description of the Prior Art] As a conventional technique, the brain front face of analyte and other important point diagnostic parts are photoed with a magnetic resonance imaging system or a CT scanner. In order to obtain the medical image which detects the internal structure and lesion section correctly, and can diagnose them exactly and to position the therapy part of analyte to a precision Form the cavernous section between the plastics made into the laminating, make the cavernous section filled with liquids, such as water, as easiest ingredient, and a magnetic resonance signal is detected. Or it is the marker who does the operation which pours in the gel of the fat-like quality of the material, and controls a magnetic resonance signal, and the thing of the non-inserting type into analyte or an inserting type has been offered. For example, the marker of the inserting type cross-joint form into the analyte indicated by JP,5-293094,A builds in the small coil in coil hippo -, makes a magnesium chloride water solution full, and is formed. Moreover, the **** inserting type marker (U.S. Pat. No. 1994 year 5368030 reference) who enclosed and formed the liquid in the cavernous section prepared in the cylindrical shape marker center section made from gel which carried out the laminating, and the marker (U.S. Pat. No. 1995 year 5427099 reference) who enclosed and formed lipid gel between two-layer plastics are offered as therapy part positioning by the magnetic resonance imaging system or the CT scanner, or a marker for medical diagnostic imaging. Like the marker who constitutes a therapy part positioning device for magnetic resonance imaging systems which was furthermore indicated by JP,2-98335,A, there are some which are formed by carrying out the laminating of the contrast-medium layer to a plastic plate.
[0003]
[Problem(s) to be Solved by the Invention] However, he is the marker used mainly in the brain surgery field. The marker who positions a therapy part with the above-mentioned magnetic resonance imaging system or above-mentioned CT scanner by the Prior art, or is used for a precision diagnosis of an area of interest Carry out the laminating of the sheet plastic and many sheet type things by the approach of enclosing a liquid and lipid gel with the cavernous section formed between them are offered. Since it is required for a marker's configuration to become large-sized generally, and to carry out sealing of the sheet plastic which carried out the laminating completely, and to aim at liquid-spill prevention, the manufacture approach becomes complicated and a manufacturing cost is increased.
[0004] a **** -- a sheet -- a type -- a marker -- many -- a case -- brain surgery -- a field -- it can set -- a diagnosis -- the purpose -- developing -- having -- magnetic resonance -- an operation -- reacting -- a liquid -- etc. -- using -- things -- a magnetic resonance imaging system -- ** -- providing -- having -- **** -- a case -- not being few -- a magnetic resonance imaging system -- a CT scanner -- using together -- analyte -- a therapy -- a part -- being precise -- positioning -- effectiveness -- being good -- a precision

-- a diagnosis -- needing -- as -- a case -- **** -- being inconvenient .
[0005] Furthermore, in the field of orthopedics, in order to detect and diagnose the laceration and therapy part which were produced inside analyte, it is necessary to position the area of interest of the photoed medical image by the marker over a comparatively large part. In this case, since the comparatively large range of an area of interest is pinpointed, if a sheet type marker is used, the inconvenience that two or more markers must be used will follow.
[0006]
[Means for Solving the Problem] The sheet type marker for a diagnosis / therapy the magnetic resonance imaging system of this invention or for CT scanners does the laminating of a sheet plastic and the sheet plastic of double-sided adhesiveness, and is characterized by consisting of structure where carried out the laminating of a non-magnetic metal line and the magnetic tape, and they were made to fasten among those two-layer sheets plastic.
[0007] Moreover, the flexible type marker for a diagnosis / therapy the magnetic resonance imaging system of this invention or for CT scanners is characterized by consisting of structure of attaching the non-magnetic metal line formed spirally around a plastic tube with the elasticity which built in the magnetic tape, the gel, or the liquid which carried out the laminating, and making the tube made from a latex fitting that plastic tube and non-magnetic metal line in it.
[0008]
[Means for Solving the Problem] Below, an accompanying drawing explains the marker for a diagnosis / therapy the magnetic resonance imaging system of this invention, or for CT scanners to a detail.
[0009] Drawing 1 is a marker for the diagnosis / therapy the magnetic resonance imaging system of this invention, or for CT scanners, and the front view of one example of the sheet type marker who indicated to claim 1, and drawing 2 are [the sectional view of other examples and drawing 4 of the sectional view of drawing 1 and drawing 3] the perspective views of the 3rd example.
[0010] In each drawing, it is the non-magnetic metal line by which a magnetic tape and 2 were formed for 1 and the skin of analyte and 6 were spirally formed for a non-magnetic metal line, the sheet plastic of double-sided adhesiveness [3 / 4 / a sheet plastic and], and 5.
[0011] In one example shown in drawing 1 and drawing 2 , the sheet plastic 4 which constitutes the sheet type marker of this invention is formed with the pressure sensitive adhesive doudle coated tape so that a magnetic tape 1 and the non-magnetic metal line 2 may be fastened between sheets plastic 3 and it can stick on the skin 5 of analyte.
[0012] Between the sheet plastic 3 and the sheet plastic 4 currently formed with the pressure sensitive adhesive doudle coated tape, the non-magnetic metal line 2 is fastened by the magnetic tape 1, where a laminating is carried out.
[0013] Instead of forming a sheet plastic 4 with a pressure sensitive adhesive doudle coated tape, a sheet plastic 3 and a sheet plastic 4 may be formed with one side adhesive tape. In this case, a sheet plastic 3 fastens a magnetic tape 1 and the non-magnetic metal line 2 between sheets plastic 4, and it is [a sheet plastic 4] desirable to be formed so that it can stick on the skin 5 of analyte.
[0014] When carrying out the laminating of the non-magnetic metal line 2 and forming it in the above-mentioned magnetic tape 1, width of face of a magnetic tape 1 is set to 1mm or 3mm according to each application for the object for brain surgery, or orthopedics, respectively, and, as for the diameter width of face of the non-magnetic metal line 2, it is desirable to set the way in two ways to 0.4mm equally, and to be formed. therefore, the non-magnetic metal line 2 by which, as for the magnetic tape 1, the laminating of the both ends was carried out according to each application -- respectively -- 0.3mm -- or it is formed more broadly and fastened between plus ********-** 3 and 4 in the center section in parallel the long side of plus ********-** so that it may project about 1.3mm.
[0015] The sheet type marker for a diagnosis / therapy the magnetic resonance imaging system formed as mentioned above or for CT scanners is stuck on the skin 5 of analyte in the brain front face of analyte, or other areas of interest. When a photograph is taken with a magnetic resonance imaging system, the magnetic tape 1 formed more broadly than the non-magnetic metal line 2 The magnetic field of the magnetic resonance imaging system in important point diagnosis / therapy part of analyte is deflected, it

projects on the medical image of analyte and a photograph is taken so that it may be recognized as two lines, 0.3mm or 1.3mm width-of-face grade, and precise positioning of diagnosis / therapy part of analyte can be carried out.
[0016] Moreover, if the marker by this invention is stuck on the skin 5 of analyte in the brain front face of analyte, or other areas of interest and a photograph is taken with a CT scanner, the non-magnetic metal line 2 absorbs the emitted X-ray, and a photograph is taken on the medical image of analyte so that it may be recognized as one line about 0.4mm width of face, and precise positioning of diagnosis / therapy part on that image can be carried out.
[0017] Drawing 3 shows other examples of the marker for a diagnosis / therapy for a magnetic resonance imaging system or CT scanners who indicated to claim 1.
[0018] A magnetic tape 1 adjoins the non-magnetic metal line 2, and is fastened among the two-layer sheets plastic 3 and 4 as shown in drawing 3 . One side of the sheet plastic 4 formed with the pressure sensitive adhesive doudle coated tape is stuck and fixed to the skin 5 of analyte. In this case, it is desirable to set width of face of a magnetic tape 1 to 0.5mm or 3mm, respectively, to set equally width of face of the non-magnetic metal line 2 to 0.4mm according to each application for brain surgery or orthopedics, and to be formed. Moreover, sheets plastic 3 and 4 may be formed with one side adhesive tape.
[0019] If important point diagnosis / therapy part of analyte is photoed with a magnetic resonance imaging system, the magnetic tape of the marker by this example deflects the magnetic field of a magnetic resonance imaging system, according to each application for the object for brain surgery, or orthopedics, the line about 0.5mm or 3mm width of face projects on the medical image of important point diagnosis / therapy part, and is photoed, respectively, and diagnosis / therapy part can be positioned to a precision.
[0020] Moreover, if important point diagnosis / therapy part of analyte is photoed with a CT scanner, the non-magnetic metal line 2 of the marker by this example absorbs the X-ray emitted from a CT scanner, the line of 0.4mm width of face projects on the medical image of important point diagnosis / therapy part, and is photoed, and a therapy part can be positioned to a precision.
[0021] Moreover, like the 3rd example of the marker for a diagnosis / therapy for a magnetic resonance imaging system or CT scanners who was shown in drawing 4 and who indicated to claim 1, a non-magnetic metal line may be formed as a spiral metal wire 6, it may attach around a magnetic tape 1, and you may fasten among sheets plastic 3 and 4.
[0022] If you are going to make it absorb an X-ray strongly and a thick metal wire is used in order to offer the marker who can position the area of interest of analyte to a medical image top precision using a CT scanner, an artifact will be produced, and when a super-thin metal wire (for example, diameter of 0.1mm or less) is used, there is a fault that the purpose which positions an area of interest to a precision is not attained from constraint of the resolution (about 1mm) of a CT scanner. in this case, the non-magnetic metal line 6 currently formed in the form which cannot be illuminated using a thin metal wire -- the above-mentioned artifact -- **** -- an area of interest can be positioned on a medical image without things at a precision.
[0023] Drawing 5 , drawing 6 , and drawing 7 are the arrangement block diagrams of the magnetic tape 1 fastened among sheets plastic 3 and 4 (not shown) so that it could use as a ruler for positioning, when positioning diagnosis / therapy part to a precision by the sheet type marker of this invention.
[0024] If the area of interest of analyte is photoed with a magnetic resonance imaging system using the marker who has arranged the magnetic tape 1 among sheets plastic 3 and 4 in a configuration which was illustrated in each drawing, since it will be projected on the medical image of the area of interest of analyte as a line as the configuration by which the magnetic field of the equipment was deflected and the magnetic tape 1 has been arranged, it can use as a precise ruler for positioning of the therapy part on the image.
[0025] Drawing 8 shows one example of the flexible type marker for the diagnosis / therapy for an indicating-to claim 2 magnetic resonance imaging system, or CT scanners.
[0026] The non-magnetic metal line by which 6 was spirally formed in drawing 8 , the magnetic tape

(not shown) which carried out the laminating of 7, gel, or a liquid, The edge in which 8 forms a plus theque tube in and 9 forms opening of the plus theque tube 8, The edge of the non-magnetic metal line 6 by which 10 was laid under the tube made from a latex, and 11 was laid underground in the plus theque tube 8, and 12 are edges which form opening of the tube made from a latex, and other edges of the plus theque tube 8 and the tube 10 made from a latex are closed, respectively.
[0027] The magnetic tape 7 which carried out the laminating is arranged in the elastic plastic tube 8, the non-magnetic metal line 6 formed spirally is attached around the plastic tube 8, and the plastic tube 8 and the non-magnetic metal line 6 are made to fit in the tube 10 made from a latex. In this case, gel or a liquid 7 may be used instead of the magnetic tape 7 which carried out the laminating.
[0028] The non-magnetic metal line 6 spirally formed using the thin metal wire can position an area of interest on a medical image at a precision, without producing an artifact. In this case, as for a thin metal wire, it is desirable that copper wire with a diameter of about 0.7mm is used. Moreover, it is desirable that the diameter of the plastic tube 8 and the tube 10 made from a latex with which the non-magnetic metal line 6 is fitted in is formed in 5mm, and die length is formed in about 300mm, respectively.
[0029] It sets to the flexible type marker for a diagnosis / therapy the magnetic resonance imaging system of this invention, or for CT scanners as illustrated by drawing 8 . The edge 11 of the spiral non-magnetic metal line 6 As it is inserted into the plus theque tube 8 in the edge 9 which forms opening of the plus theque tube 8 in order to protect the tube 10 made from a latex, and illustrated by drawing 9 , drawing 10 , and drawing 11 Since a marker's component (6, 7, 8) fitted in the tube 10 made from a latex is fixed, the edge 12 which forms opening of the tube 10 made from a latex is concluded. In this case, the edge 9 of the plus theque tube 8 is concluded with the edge 12 of the tube 10 made from a latex.
[0030] It is necessary to position and diagnose to a precision the laceration and important point diagnostic part which were generally produced inside analyte on the medical image which pinpointed and photoed the area of interest in the large range in the orthopedics field.
[0031] In order that the flexible type marker for a diagnosis / therapy the magnetic resonance imaging system of this invention according to claim 2 or for CT scanners may position the area of interest of the photoed medical image in the large range and may diagnose to a precision mainly in the orthopedics field, he offers the marker in whom effective telescopic motion and deformation are free.
[0032] On the medical image photoed with the magnetic resonance imaging system or the CT scanner, when it is going to position an area of interest in the large range using a marker, since the range which can be positioned by the sheet type marker is restricted to the narrow range of 2-5mm diameter width of face, the inconvenience which must use two or more markers is accompanied by it. The flexible type marker who indicated to claim 2 of this invention As illustrated by drawing 9 (application Fig. to analyte), drawing 10 (application Fig. which constituted the character of 8), and drawing 11 (application Fig. which constituted Z form), respectively, the marker itself is formed for a long time (300mm). Since telescopic motion on the structure and deformation are free, A laceration, a neoplasm, etc. which positioned the large range and produced the area of interest on a medical image inside analyte can be specified and diagnosed.
[0033]
[Effect of the Invention] As explained above the sheet type marker for a diagnosis / therapy the magnetic resonance imaging system of this invention or for CT scanners Carry out the laminating of the non-magnetic metal line to a magnetic tape, and it has structure fastened and formed between two-layer sheets plastic. Since the approach of enclosing a liquid and lipid gel is not used, a marker can be miniaturized and the liquid-spill prevention from a two-layer sheet plastic can be excluded, it is effective in the use being safe, becoming easy [the manufacture approach], and reducing a manufacturing cost.
[0034] Since a magnetic tape and a non-magnetic metal line are fastened between two-layer sheets plastic at a compact, and it is formed, and the sheet type marker of this invention can apply to the application which carries out positioning and a diagnosis of a therapy part when using together a magnetic resonance imaging system and a CT scanner, he is convenient and economical.
[0035] Furthermore, the flexible type marker of this invention can exclude using two or more markers of

the sheet type with which the range which can position an area of interest in the large range on the photoed medical image, and can recognize and diagnose a laceration, a neoplasm, etc. which were produced inside analyte on a medical image, therefore is positioned is restricted to the narrow range, and can offer a marker easy [the manufacture approach] and cheap economically and conveniently.

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CLAIMS

[Claim(s)]
[Claim 1] The marker for a diagnosis / therapy a sheet type magnetic resonance imaging system or for CT scanners who consists of structure where photo the brain front face of analyte, and other important point diagnostic parts with a magnetic resonance imaging system or a CT scanner, and carry out the laminating of a sheet plastic and the sheet plastic of double-sided adhesiveness in the structure of the marker who uses for a diagnosis / therapy of analyte, and carried out the laminating of a non-magnetic metal line and the magnetic tape, and they were made to fasten among those two-layer sheets plastic.
[Claim 2] The marker for a diagnosis / therapy a flexible type magnetic resonance imaging system or for CT scanners who consists of structure of attaching the non-magnetic metal line formed spirally around a plastic tube with the elasticity which built in the magnetic tape, the gel, or the liquid which carried out the laminating, and making the tube made from a latex fitting those plastic tubes and non-magnetic metal lines in it.

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